



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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December 20, 2012

Thomas Eaton, Director  
EPA Region 10, Washington Operations Office  
300 Desmond Dr SE Suite 102  
Lacey, WA 98503

Re: EPA report on Yakima nitrates in groundwater

Dear Director Eaton:

The Washington State Department of Ecology has reviewed the recent report from the U.S. Environmental Protection Agency (EPA) entitled "*Relation Between Nitrate in Water Wells and Potential Sources in the Lower Yakima Valley, Washington, EPA-910-R-12-003*" released in September, 2012. We offer the following general comments.

The report continues progress in delineating the extent of groundwater contamination in the Lower Yakima Valley. Identifying sources of nitrate is a complex and difficult task due to the numerous sources and transformations in the environment. All of these factors make it extremely difficult to pinpoint the source of nitrate contamination.

EPA used a variety of indicator parameters and physical characteristics to quantify loading and identify potential sources of nitrate in the area. The use of indicator parameters to identify sources of contamination in groundwater is a standard practice that is well documented in the literature. While many of these indicator parameters by themselves may not be able to definitively identify a specific source, taken together they provide a clearer picture. This study succeeded in identifying likely sources by using a combination of hydrogeologic information, nitrate concentrations, ionic signatures, and the presence of veterinarian pharmaceuticals. Veterinarian pharmaceuticals are an indicator of an animal source, and several of the pharmaceuticals tested are specific to dairy cows. The presence of veterinarian pharmaceuticals in groundwater combined with other factors discussed above indicates that dairies sampled in this study are discharging nitrate to groundwater and contributing to contamination of the resource.

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The lack of well construction information on many of the wells is unfortunate. In order to make more definitive conclusions on the sources of nitrate contamination, well depth and the screened interval are essential information. It is our hope that EPA will conduct Phase 4 of their planned study, as originally proposed in their quality assurance project plan, and install monitoring wells to refine the conclusions drawn in this study. These additional steps should reduce uncertainty regarding the findings and more clearly identify sources of nitrate contamination in Lower Yakima Valley groundwater. Ecology would be happy to provide technical review of the Phase 4 monitoring plan.

In summary, EPA's report indicates that dairies are discharging nitrate to groundwater. In order to better define the extent of this discharge, Ecology recommends that EPA conduct Phase 4 of their planned study.

Sincerely,

A handwritten signature in black ink, appearing to read 'R. Duff', with a stylized flourish at the end.

Robert Duff  
Manager, Environmental Assessment Program

cc: Kelly Susewind, Manager, Ecology Water Quality Program